

PHILADELPHIA NEUROLOGICAL SOCIETY.

January 28, 1901.

The President, Dr. Wm. G. Spiller, in the chair.

PARESIS SIMULATING BRAIN TUMOR.

Dr. Wharton Sinkler called attention to the fact that it is the experience of every neurologist that cases of paresis come under observation with symptoms which so closely resemble focal brain lesions that it is often difficult to believe that there is no gross lesion present. The convulsive seizures which occur as late symptoms of paresis are frequently Jacksonian in type. As the disease progresses the convulsions may be followed by transient hemiplegia and there may be aphasia. When these symptoms occur before the peculiar mental features of paresis are conspicuous, the diagnosis is difficult. Illustrative of these facts, the two following cases were reported:—

Case I.—A man 35 years of age with a history of syphilis. The patient had a very bad family history, as there were three brothers who were or had been insane, and an uncle had softening of the brain. The first symptom was a sudden attack of violent pain in the left eye. This was followed by double vision, and the patient consulted Dr. Oliver, who referred him to the writer. Under the use of potassium iodide and faradism the pain and double vision disappeared. Two years later the patient had convulsions of an epileptiform character. They were followed by severe headache, but there was no paresis. A little later the patient had an attack of excitement, and delusions of persecution with some grandiose ideas developed. On January 7, 1888, he had three or four convulsions. These were followed by aphasia and ptosis. Later another convulsion occurred which was followed by aphasia and loss of power in the right arm, which lasted for a few days. After this time the patient's mental symptoms became more prominent. There were periods of excitement and marked delusions of grandeur. The patient died about four years after the first convulsion. An autopsy revealed no gross lesions of the brain, but there was opacity of the membranes and an unusual amount of subarachnoid serum.

Case II.—A man of 32 years of age. He never had syphilis and had always been temperate and correct in his habits. Four years before he was seen by Dr. Sinkler, in altercation with a man he was struck a violent blow on the head,

which knocked him down, and in falling he struck his head against a bulk-window. When he got on his feet he was again knocked down by a blow on the side of his head, by his assailant. He walked home and was stunned and dazed for a short time, but there was no evidence of external injury. About two months later he began to have noises in the right ear and some impairment of hearing. About three years after the injury he began to have tremor of the hand, hesitation in speech, and some loss of memory. Soon after this time he had a seizure, in which there was a sense of numbness, which began in the right leg and extended to the arm and head. Two months later he had a similar attack and afterwards a third. He had drooping of the lid; numbness of the arm and leg and thickening of speech after these attacks. After a few hours the sensory disturbance passed off, but there was inclination to drag the leg. The patient's mental condition began to deteriorate; he became delusional and at times had periods of excitement. Eventually he fell into a state of dementia and died about two years after the onset of his symptoms. A careful examination of the brain by Dr. W. G. Spiller revealed lesions characteristic of paresis.

Dr. F. X. Dercum showed a large subcortical tumor of the occipital lobe that had caused right-sided hemiparesis and right homonymous hemianopsia, together with Wernicke's pupillary inaction sign as a distance symptom.

Dr. D. J. McCarthy said that in making the autopsy he had found the skull exceedingly thin, and over the tumor it was paper-like. The dura was very tense, especially on the affected side, and the cortex over the tumor was very soft. The growth showed the structure of a tuberculoma. The tubercle bacilli were not found, but in many tuberculomata it is difficult to find the bacilli on account of their scarcity.

Dr. Chas. K. Mills made some remarks on the localization of brain-tumors, especially with reference to the parietal and prefrontal regions, based on five cases in which the sites of tumors were located for the purpose of operation.

Dr. Mills also exhibited a subcortical tumor.

Dr. John K. Mitchell reported a case of endothelioma of the brain.

A CASE OF COMPLETE UNILATERAL OCULOMOTOR PALSY.

Dr. Riesman, after discussing the etiology and pathology of oculomotor palsies, presented a patient—a man thirty-nine years of age, with complete paralysis of the left oculo-

motor nerve. There was ptosis, and the internal superior and inferior recti and the inferior oblique muscles were paralyzed. The pupil was dilated *ad maximum*, and there was no reaction to light or in accommodation. The eyebrow on the left side was raised very high, owing to a tonic contraction of the occipito-frontalis. The visual fields were contracted, especially that of the left eye, and there was a mild neuro-retinitis. Diplopia had existed for two days in the beginning of the eye trouble. There was no headache—only a sense of oppression and some dizziness. The patient had had a chancre six years previously, and had been treated, apparently with mercury, during a period of three months. Dr. Riesman placed the lesion in the trunk of the nerve, in front of its superficial origin on the inside of the crus, and believed that it was syphilitic in nature.¹

Dr. W. W. Keen said that he had been fortunate enough to see all of the five cases reported by Dr. Mills. One was an endothelioma, three of them were sarcomata beginning usually subcortically and bursting through the cortex. The fifth case presented a very peculiar condition; it seemed to be the result of a thrombosis of the middle cerebral artery producing degenerative changes in the area indicated. He at first began to remove the mass, but subsequently desisted when he found how large an opening in the skull would be required and how large an area of the brain was involved.

He dwelt upon the advantages of the modern method of making a large osteo-plastic flap. In the case of the boy he was in this way able to uncover a large area of the brain and expose the tumor. There was one symptom in this case which had not been alluded to and that was the presence of a distinct cracked-pot sound on percussing the skull. This he attributed to the separation between the edges of the bone caused by the large tumor, allowing vibration between their edges.

A serious question with reference to operation in these cases is the amount of injury done to the brain. In several of these cases the tumors were very large and the amount of injury done was considerable. In the case of the boy, the lateral ventricle was opened. This was shown by the change in the color of the blood due to the admixture of the cerebro-spinal fluid. No harm resulted and the boy recovered.

One feature in this case as in some of the others was the early recovery of the motor function. Within forty-eight hours the patient had recovered the ability to move the arm and the leg.

Two of the cases referred to died. Dr. Mitchell's case died as the result of the shock. The other case died as the result of hemorrhage into the brain. If he had drained, Dr. Keen thought that the

¹Since the presentation of the patient, there has been a marked improvement under anti-syphilitic medication. The ptosis has almost entirely disappeared, and there is considerable movement in the ocular muscles. Reaction to light and in accommodation can be sometimes obtained, but not always.

hemorrhage would not have caused death, but the opening was so large and the amount of tissue lost so great that if the cavity had been drained fungus cerebri would certainly have developed. The man did well for twenty-four or thirty hours, when symptoms of pressure developed and increased steadily until the time of his death. In the case of the boy Dr. Keen did not entirely close the wound, but packed it with iodoform gauze which was removed at the end of twenty-four hours. The opening was then closed by a suture introduced at the time of operation. In spite of the early closure, there is evidence of beginning fungus cerebri. In this case he proposed to do nothing beyond dressing the wound every day and cutting away the fungus if it protrudes beyond the scalp.

In the case of large tumors he thought that it was often desirable to do the operation in two stages. In the two fatal cases the result had not been due to doing the operation in one stage. In cases where the operation would be a prolonged one, or where the hemorrhage was great, he would prefer to do the operation in two stages instead of one.

He dwelt upon the importance of early operation in these cases. The rule laid down by Victor Horsley he considered a good one, that after treatment, especially by the iodides, has been continued for six weeks without beneficial results, operation if it is deemed at all possible should be done at once.

Dr. William J. Taylor referred to the occurrence of hemorrhage in some of these cases. In Dr. Mitchell's case the bleeding was general. There had been a large amount of blood from the scalp and a large flow of venous blood from the dura. In these cases he was more afraid of venous bleeding than of any other kind. He had seen cases die unquestionably from venous bleeding, but he had never seen one die from arterial bleeding. In one case of sarcoma in which the tumor had penetrated the skull, the operation had to be stopped on account of the hemorrhage from the scalp. The bleeding was with difficulty controlled by a continuous ligature around the edge of the flap. After two or three days the skull was opened and a portion of the sarcoma removed. Of late he had been in the habit of making a small trephine opening in order to gauge the thickness of the skull. In one of the cases the skull in some places was not over one-tenth of an inch in thickness.

Dr. George E. de Schweinitz, referring to the occurrence of optic neuritis as a symptom of intracranial growth, said that papillitis, which is synonymous with optic neuritis, may be designated choked disc when the elevation has reached two-thirds of a millimeter, or about 2.5 to 3 diopters, and is then one of the most important, if not the most important, general symptom of brain tumor. As there is still much dispute in regard to the pathology of this condition, it did not seem profitable to enter into the discussion further than to say that it must be conceded that two varieties of papillitis accompanying brain tumor are evident, one an edema of the disc and the other an inflammatory affection of the nerve and the nerve-head sometimes extending outward into the retina. Finally, there may be a commingling of these two conditions. All varieties are likely to be accompanied by a distension of the intervaginal sheath. Of more importance from the neurological standpoint is to determine the frequency with which choked disc accompanies brain tumor. Much statistical information on this point has been published, and

if an average of the observations is taken, it may be safely stated that fully 80 per cent. of brain tumors will some time or other in the course of their development originate this symptom. The speaker was of the opinion that the percentage was even higher, because it must be remembered that not infrequently papillitis was late in appearing, as, for example, in the case detailed by Dr. John K. Mitchell. Very important is the determination of the relative frequency of papillitis according to the situation of the tumor, and in this connection the following table compiled by Edmunds and Lawford was quoted:

LOCALITY OF TUMOR	OPTIC NEURITIS.	NO OPTIC NEURITIS.	TOTAL.	PER CENT. OF OPTIC NEURITIS.	PER CENT. WITHOUT OPTIC NEURITIS.
1. Anterior frontal convolutions..	8	2	10	80	20
2. Motor convolutions		12	12		100
3. Occipital lobes	5	4	9	55.5	44.5
4. In hemispheres	6	4	10	60	40
5. Ganglia at base	17	3	20	85	15
6. Temporo-sphenoidal lobes.....	1	2	3	33.3	66.6
7. Cerebellum	20	3	23	86.9	13.1
8. Medulla and pons.....	3	0	9	33.3	66.6
9. Meningeal growths at motor convolutions	4	1	65	80	20
10. Meningeal growths elsewhere...	4	2	6	66.6	33.3
Total	68	39	107		

From this analysis it was seen that there was a comparative immunity from optic neuritis of cases of tumor in the cortical motor area, while there was an increased frequency and severity of papillitis in cerebellar tumors. If all cases of tumor towards the convexity of the brain be added together there is a yield of 50 per cent. of optic neuritis, while those toward the base constitute 61 cases, with a percentage of 74 of optic neuritis.

Growths in two regions of the brain seldom, if ever, produce papillitis, namely, the medulla, and according to Rath, the hypophysis. In the latter situation there is some doubt as to the accuracy of this statement, but although tumors which involve both the medulla and the pons may be associated with optic neuritis, when the growth is strictly localized in the medulla, papillitis, if it ever occurs, must be extremely uncommon. A case in point was quoted by Dr. de Schweinitz in which a growth the size of a marble in the medulla had failed to produce the slightest sign of inflammation or edema of the nerve-head. Pursuing this subject of the relative frequency of optic neuritis, a second table was quoted, more extensive than the one of Edmunds and Lawford, and showed in some respects decidedly different results. This had been compiled by Dr. John Weeks of New York, and was as follows:

LOCATION	NO.	NO. OPTIC NEURITIS	UNILATERAL	DOUBLE OPTIC NEURITIS	PER CENT.
Frontal lobes	64	12	4	48	80.3
Temporo-sphenoidal	24	9	0	15	62.5
Motor area	113	46	3	64	59.2
Parieto-occipital	33	4	3	26	87.8
Brain surface	13	4	0	9	69.2
Centrum ovale	58	17	2	39	70.7
Corpora quadrigemina	19	0	0	19	100
Basal ganglia	36	15	0	22	61.1
Multiple	39	11	2	26	46.6
Corpus callosum	12	7	0	5	41.7
Pituitary body	18	9	0	9	50
Pineal gland	1	1	0	0	0
Crura	5	1	0	4	80
Pons	50	20	5	25	60
Cerebellum	164	21	4	139	87.2
Base of cranium	10	1	0	9	90
General	10	3	4	11	83.3
Total	677	180	27	470	69.4

This indicates that papillitis is most frequently found accompanying tumors of the corpora quadrigemina, and next those of the parieto-occipital lobe and cerebellum. More exceptional ophthalmoscopic appearances occurring in place of typical choked disc are unilateral optic neuritis and papillo-retinitis with star-shaped figure in the macula, exactly repeating the appearances seen in albuminuric retinitis. The significance of unilateral papillitis is given in the following table; compiled by Martin and Weeks: (See page 300.)

From this it is seen, as Dr. Weeks has pointed out, that the greater frequency of the occurrence of unilateral optic neuritis on the side of the tumor in so far as the frontal, temporo-sphenoidal and motor portion of the cerebrum is concerned, is as 4 to 1. A star-shaped figure in the macula due to infiltration and fatty change in the cone fibers may be seen in brain tumor, in albuminuric retinitis, in retinal hemorrhages occurring in young people and in some varieties of syphilitic neuro-retinitis. Therefore the idea that this appearance is diagnostic of Bright's disease must be set aside. Again, double papillitis, although highly significant of intracranial disease, especially of tumor or basilar meningitis, is not a pathognomonic sign, as it may be associated with Bright's disease, gout, and certain poisons which may or may not in their turn be connected with the intracranial lesion. Optic neuritis does not give information of the nature of the tumor which may cause it, although it may be the only sign of its presence. It occurs in all forms of neoplasm, although it is most frequently absent in tubercular tumors. Neither does neuritis afford evidence of the size of the growth, as it may be intense

LOCATION	ON SIDE OF LESION	ON OPPOSITE SIDE	TOTAL
Frontal	10	2	12
Temporo-sphenoidal	5	0	5
Motor	14	3	17
Parieto-occipital	2	4	6
Multiple	2	0	2
Basal ganglia	1	0	1
Centrum ovale	1	2	3
Corpora quadrigemina	1	0	1
Pituitary body	0	1	1
Pons and medulla	4	2	6
Cerebellum	1	3	3
General		1	1
Total	41	17	58
Per cent.	70.7	29.3	

with a small lesion, and slight or absent with a great one. But decided choked disc is more significant of tumor than slight papillitis. By itself choked disc, although highly significant of brain tumor, is of no localizing value, and must be associated with other confirmatory symptoms to be of absolute pathognomonic significance. Subsidence of a neuritis which has not greatly developed points to a certain extent to a subsidence of its intracranial cause; while sudden increase in papillitis, producing the variety which is known as choked disc, may indicate increase, if not of the size, at least of the irritative quality of the intracranial lesion. A very important matter is the vision in choked disc. As is well known, this may remain perfect for a long period of time. Therefore the testing of vision without ophthalmoscopic examination is valueless. In certain regions, for example, in the cerebellum, the growth is apt to be associated with early blindness, a fact of some significance. A very important matter not yet sufficiently studied, and particularly pointed out by Dr. Weeks in his investigations, is that defects of vision; and particularly defects in the visual field, are often due to a degeneration of the ganglion cells of the retina which is found in association with the optic neuritis. Such degenerations might readily produce symmetrical defects in the visual field, and therefore this pathological fact should be taken into account when the visual field is mapped for the purpose of attempting to localize an intracranial growth. There is a good deal of evidence to show that operations for the removal of intracranial tumors are frequently followed by a subsidence of the optic neuritis, although it sometimes happens that instead of a subsidence there is a marked increase in the papillitis, and in very rare cases, one of which has been reported by Dr. de Schweinitz and Dr. Thomson, a second attack of optic neuritis follows the trephining.

Although not strictly germane to the subject under discussion, as the symptom had been referred to, Dr. de Schweinitz desired to

say that Wernicke's symptom, or the hemiopic pupillary inaction, while exceedingly significant and of great value if present, was very difficult to demonstrate, so difficult, in fact, that some very accomplished observers have doubted its value. His own experience was that the ordinary crude methods employed, of simply throwing a beam of light in the eye with a magnifying glass were valueless. The best plan was to place the patient with his back to the source of light, illumine the face and the pupillary area with a large plane mirror, and while the patient's attention was steadily fixed on one point, to take a second mirror of stronger focus, as, for example, such a one as is attached to the ophthalmoscope, and cast a beam of light at different angles into the pupillary space. In all his experience he was not sure that he had seen this symptom incontrovertibly established except twice, one of these cases coming to autopsy and proving the correctness of the observation.

Dr. Spiller asked Dr. de Schweinitz whether he considered it justifiable to trephine when choked disc and certain symptoms suggesting brain tumor existed, although the growth could not be localized, *i.e.*, whether he considered it justifiable to trephine in the hope of preserving vision and modifying some of the symptoms of brain tumor. In some cases the mere opening of the skull seemed to have been of benefit.

Dr. de Schweinitz said he had no personal experience in this matter, although he was aware of the fact that one observer, Grosz, had quoted a number of instances in which simple trephining had been followed by a subsidence of the choked disc. On the other hand, as he had stated, trephining may be followed by an increase of the papillitis. On general principles he would not consider it justifiable to advocate trephining for the cure of optic neuritis.

Dr. E. A. Shumway referred to a case of Dr. Spiller's in which on making a microscopic examination, a minute sarcoma was found in the choroid, which was associated with an endothelioma of the brain. If this sarcoma had been found at the ophthalmoscopic examination, it probably would have been accepted as an indication that the brain tumor was a sarcoma.

Dr. F. X. Dercum said that in order that the symptoms of astereognosis should have a localizing value, it must be distinguished by certain features. As he had already shown, astereognosis may be present in disease of the peripheral nerves, of the spinal cord, of the medulla and of the brain. In astereognosis, due to disease of the peripheral nerves or of the tracts within the cord, the symptom has its origin in the fact that one or more of the impressions necessary to the forming of the mental image, does not reach the cortex by reason of the defect in the afferent pathways. If in a given case, on the other hand, all of the various cutaneous and other sensations, which are necessary to normal stereognosis, be preserved, and notwithstanding this astereognosis be present, we have a right to infer disease of the cortex, that is, all of the factors essential to stereognosis perception are being transmitted along the proper pathways and yet due to a want of proper combining power in the cortex, astereognosis is present.

In order that astereognosis should have a definite cortical localizing value, it must be associated with one or other of the following symptoms. There must either be present some sensory loss or some motor loss; there is present either paralysis or paresis or some defect of sensation, possibly a mere hypesthesia. At times a slight

ataxia may be the only motor symptom present with stereognostic loss. If any or all of these symptoms be present in a case of astereognosis, they justify the inference, other things equal, that we have a lesion in the posterior portion of the superior parietal lobule on the opposite side.

With regard to Wernicke's symptom, Dr. Dercum stated that he had observed it in one patient in whom he had been able to verify the symptom by post-mortem examination. This case has been published. In this patient the experiment was made in a very simple manner with a candle in a darkened room and the difference in the reaction of the iris to the candle with respect to the blind and normal halves of the retina was so decided that a tyro would have recognised it. As long as the candle was held in such a position that the rays fell upon the blind half of the retina the pupil remained dilated; the moment the candle was brought across the middle line and the rays fell upon the sound half of the retina, the iris promptly contracted. Dr. Dercum also said that he had observed this symptom in a patient still living in the Nervous Wards of the Philadelphia Hospital. In the case of the tumor presented by himself the Wernicke reaction was unmistakably present though the difference in the two responses of the iris was not as marked as that observed by him in the case which had been verified by autopsy. Dr. Dercum considered the symptom in the present case as due merely to pressure. In other words, it was a distance symptom. This is further rendered probable by the fact that the symptom had not been observed by a competent ophthalmologist some days before.

Dr. Charles K. Mills said that when astereognosis is of decided value in cerebral diagnosis, other symptoms are usually present; nevertheless he believed that astereognosis with disorders of sensibility and with ataxia may be present without motor paresis, in lesion of the superior parietal convolution.

Dr. W. G. Spiller referred to a case similar to that reported by Dr. Mitchell. The man had been struck on the forehead many years ago. Some years after the blow had been received he noticed that his head was enlarging, and still later he had paresis on the opposite side of his body. He had also optic neuritis and some difficulty in finding certain words although the tumor was not in the speech area. He was operated on but died from shock and hemorrhage. The tumor was of the same character as in Dr. Mitchell's case and in almost the same position. It grew from the dura and caused a large depression in the brain without infiltrating the brain.

Dr. Spiller also referred to the peculiar appearance presented by softening of the brain as seen in the living subject, as he had had an opportunity of seeing it at operation in one of the cases referred to by Dr. Keen. The comparison to baked custard made by Dr. W. J. Taylor Dr. Spiller considered very descriptive. On microscopical examination of the tissue removed, Dr. Spiller found a condition which might have been produced by syphilis, but might have been from other causes. The vessels were thickened, round-cell infiltration was intense, and numerous fatty granular cells were found in the cerebral tissues.